3DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8, and 10-18, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rinechard et al. (U.S. Patent 6,359,331) in view of Huber et al. (U.S. Patent (U.S. Patent 6,147,882).

As to claims 1, and 21-23, Rinechart et al. discloses a power switching module as shown in figures 2-4, comprising:

a housing (a body of the module);

first and second DC bus structures (46, 48); the second DC bus structure electrically isolated (by an insulator material) from the first DC bus structure;

a circuit (TR1, TR2, 12, 14, 16, 18, and 20) electrically coupled between the first and second DC bus structures (58);

a high frequency capacitors (Cb, Cd) suitable for filtering, each comprising an anode and a cathode, the anode electrically coupled to the first DC bus structure (58) and the cathode electrically coupled to the second DC bus structure (58).

Rinechard et al. does not specific disclose the capacitor, which is a bulk capacitor suitable for handing load variation and filtering. Huber et al. shows a converter (100) as shown in figures 1-3 comprising a bulk capacitor (104) having electrodes connected to the converter (100). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a teaching of Huber et al. employed in the power converter of Rinechard in order to control a converter through entire of voltage and load ranges.

As to claim 2, Rinechart et al. as modified by Huber et al. discloses the first and second DC buses structures (58) comprising first and second DC bus bars having a number of terminals and wherein the housing comprises a lead frame (44), the lead frame supporting the first and the second DC bus structures.

As to claim 3, Rinechart et al. as modified by Huber et al. discloses the first and the second DC bus structures (58) are received in the housing with at least one terminal of each of the first and the second DC bus structures extending from the housing.

As to claim 4, Rinechart et al. as modified by Huner et al. discloses the circuit comprises a number of semiconductor switches (TR1, TR2) and a number of semiconductor diodes (14) electrically coupled as a bi-directional converter circuit.

As to claims 5-8, Rinechart et al. as modified by Huber et al.discloses the high frequency and bulk capacitors (Cb, Cd, see figure 2) wherein each of the capacitors is a film capacitor or an electrolytic capacitor.

As to claim 10, Rinechart et al. discloses a power switching module as shown in figures 2-4, comprising: a first housing (upper part (32); first and second DC bus bars (58), each of the bus bars (58) comprising a number of terminals, at least a portion of the first DC bus bar (58) and the second DC bus bar (58) received in the first housing with the terminals accessible from an exterior of the first housing; a bridge circuit (TR1, TR2) received in the first housing and electrically coupled between the first and the second DC bus bars (58); high frequency and capacitors (Cb, Cd), each of the capacitors comprising anode and cathode, the anode electrically coupled to at least one terminal of the first DC bus bar and the cathode electrically coupled to at least one terminal of the second DC bus bar. Rinechard et al. does not specific disclose the capacitor, which is a bulk capacitor. Huber et al. shows a converter (100) as shown in figures 1-3 comprising a bulk capacitor (104) having electrodes connected to the converter (100). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a teaching of Huber et al. employed in the power converter of Rinechard in order to control a converter through entire of voltage and load ranges.

As to claim 11, Rinechart et al. further comprising: a second housing (a lower part 30) receiving the first housing, the bulk and high frequency capacitors.

As to claim 12, Rinechart et al. further comprising: a gate driver board (34, figure 4) physically coupled to the first housing.

As to claim 13, Rinechart et al. discloses the terminals of the first and the second DC bus bars (58) extend through apertures formed in the gate driver board and the high frequency capacitor is adjacent the gate driver board.

As to claim 14, Rinechart et al. discloses the high frequency capacitor overlies at least a portion of the first housing.

As to claim 15, Rinechart et al. discloses the second housing (power part containing element 30) comprises a cold plate (34) with an inlet aperture and an outlet aperture for cooling of the cold plate.

As to claim 16, Rinechart et al. discloses a power switching module as shown in figures 2-4, comprising: a substrate (a substrate of element 32) received in a first housing, the substrate comprising a number of regions; first and second DC bus bars (58) comprising first and second set of terminals, and received at least partially in the first housing with the first and second set of terminals accessible from an exterior thereof respectively; a number of switches (TR1, TR2) mounted to at least some of the regions of the substrate and electrically coupled to one another to form a bridge circuit electrically coupled between the first and the second DC bus bars (58); first and second film capacitors (Cb, Cd) electrically coupled across the terminals of the first and the second DC bus bars (58). Rinechard et al. does not specific disclose the capacitor, which is a bulk capacitor. Huber et al. shows a converter (100) as shown in figures 1-3 comprising a bulk capacitor (104) having electrodes connected to the converter (100). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a teaching of Huber et al. employed in the power

converter of Rinechard in order to control a converter through entire of voltage and load ranges.

As to claims 17-18, Rinechart et al. discloses the first and second film capacitors are disposed in the exterior of the first housing.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rinechart and Huber et al. , and further in view of Aker et al. (U.S. Patent 6,803,746)

Regarding claim 9, Rinechart et al. as modified by Huber et al. does not specific disclose the values of each of the capacitor having capacitance of 500 μF and 800 μF.

Aker shows a fast charger for high capacity batteries comprising a capacitor having a value of 750 μF.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have capacitors as taught by Aker et al. employed in the module of Rinechart and Huber et al. in order to the minimum capacitance necessary to achieve maximum allowable ripple at full power.

Allowable Subject Matter

4. Claims 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 12/11/07 have been fully considered but they are not persuasive.

Applicant argues:

The combination of Rinechard in view of Huber fails to teach a system use a high frequency capacitor and a bulk capacitor.

Examiner disagrees because the claims claimed the "power converter" structure. Rinechard and Huber teach the same field such as a power converter for supply power and convert the power as used in the system. Therefore, it would have been obvious to use a bulk capacitor as taught by Huber employed in the power converter of Rinechard in order to control a converter through entire of voltage and load ranges.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reichard Dean can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tuan T Dinh/
Primary Examiner, Art Unit 2841